

Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1-6, 8, 9, 11-15, and 17-19 are pending in the application, with claim 1 being the independent claim. Claims 6, 9, 11-15, and 17-19 are withdrawn from considerations as being directed to non-elected subject matter. Claims 1-5 have been amended to direct the claims to compounds where G is



The amendments provided herein are believed to introduce no new matter, and their entry is respectfully requested. Applicants reserve the right to file one or more continuing applications for the subject matter cancelled.

Restriction Requirement

Applicants note that the restriction requirement was made final, and upon allowance of product claims, process claims that depend from or otherwise include all the limitations of the patentable product claims will be entered as a matter of right in accordance with M.P.E.P. § 821.04. (*See* Office Action at page 4).

Rejections under 35 U.S.C. § 103

Claims 1-5 and 8 were rejected under 35 U.S.C. § 103(a), as allegedly being *prima facie* obvious over U.S. Patent No. 5,045,560 B1 ("the '560 patent"), and U.S. Patent No. 5,258,527 ("the '527 patent"). Applicants respectfully traverse these rejections.

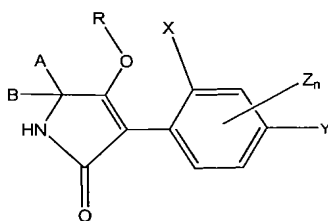
To establish a *prima facie* case of obviousness: (1) the references must teach or

suggest all of the claim limitations, (2) there must be some suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, and (3) there must be a reasonable expectation of success. *See* M.P.E.P. § 706.02(j) and cases cited therein. The United States Supreme Court, in *KSR International v. Teleflex, Inc.*, 550 U.S. 398 (2007), further clarified the requirements for obviousness analysis under 35 U.S.C. § 103(a). The Court noted that the key to supporting any rejection under 35 U.S.C. § 103(a) is the clear articulation of reason(s) why the claimed invention would have been obvious.

Applicants submit that in view of the foregoing amendments, a *prima facie* case of obviousness cannot be supported by either the '527 patent or the '560 patent, because the cited references do not provide a reason to modify the compounds disclosed therein to arrive at the genus of the present invention, and the Office used impermissible hindsight in selecting compounds from the cited references to arrive at the presently claimed invention.

The '527 patent

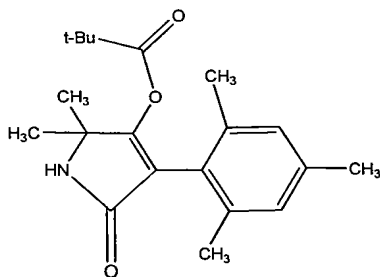
The '527 patent purportedly discloses insecticidal, acaricidal, and herbicidal compounds of the general formula:



(*See, inter alia*, Abstract of the 527 patent).

The Examiner cites the following species as being the closest to the compounds of the present invention:

A.



(See compound 330 in col. 55 of the '527 patent).

The Examiner alleges that the claimed invention differs from the above compound only by a methyl versus ethyl substitution of the phenyl ring, and a tert-butyl versus isopropyl substituent on the acetate. The Examiner states:

It would have been obvious to those skilled in the chemical arts at the time the claimed invention was made to make and use analogs of the compounds described in US 5,258,527 to produce the instant invention. Analogs differing only in the substitution of methyl with ethyl, or hydrogen with methyl are *prima facie* obvious, and require no secondary teaching.

(Office action, page 9).

Additionally, the Examiner argues:

The instant claimed compounds would have been obvious, because one skilled in the art would have been motivated to prepare homologues of the compounds taught in the reference with the expectation of obtaining

compounds which could be used in herbicidal and insecticidal compositions.

(Office action, page 9).

Applicants respectfully disagree that a *prima facie* case of obviousness has been established. According to the Federal Circuit Court:

A known compound may suggest its homolog, analog, or isomer because such compounds "often have similar properties and therefore chemists of ordinary skill would ordinarily contemplate making them to try to obtain compounds with improved properties." . . . [However], in cases involving new chemical compounds, it remains necessary to identify some reason that would have led a chemist to modify a known compound in a particular manner to establish *prima facie* obviousness of a new claimed compound.

Takeda Chem. Indus., Ltd. v. Alphapharm Pty., Ltd., 492 F.3d 1350 (Fed. Cir. 2007).

The *Takeda* decision makes clear that in order to establish *prima facie* obviousness of a new compound, one must identify some reason that would lead a chemist to modify a known compound. As it relates to the present invention, the Examiner fails to provide a reason why a chemist would modify the specified compounds of the '527 patent to arrive at the compounds of the present invention.

Specifically, the '527 patent discloses examples of over seven hundred compounds (See Tables 1-3 of the '527 patent), of which thirteen (13) have been tested for various insecticidal, acaricidal, and herbicidal activities. (See Examples A-F). Compound A has not been tested, and no indication is given in the '527 patent to the fact that it would possess a superior activity over the previously known compounds. The '527

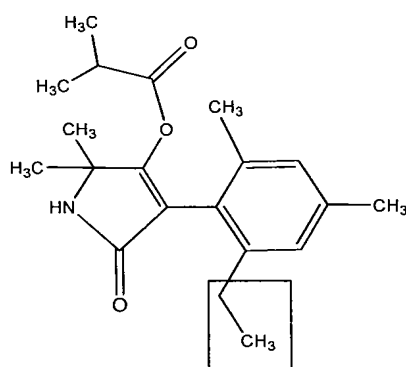
patent does not teach or reasonably suggest, nor does it provide a motivation for, modifying the compound A in the manner suggested by the Examiner. Therefore, the '527 patent does not provide a "reason that would have led a chemist to modify a known compound in a particular manner [necessary] to establish *prima facie* obviousness of a new claimed compound." *Takeda Chem. Indus., Ltd. v. Alphapharm Pty., Ltd.*, 492 F.3d 1350 (Fed. Cir. 2007).

Additionally, Applicants contend that the Office selected compound A for modification into the presently claimed compounds based on impermissible hindsight. According to the M.P.E.P., "impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art." M.P.E.P. § 2142. As discussed above, out of over seven hundred compounds disclosed by the '527 patent, only thirteen have been tested for their activity, none of which include compound A. The facts presented in the '527 patent would not have led one of ordinary skill in the art to modify compound A to arrive at the presently claimed compounds. Thus, Applicants contend that the Office merely selected compound A from the exceedingly broad disclosure of the '527 patent based on impermissible hindsight.

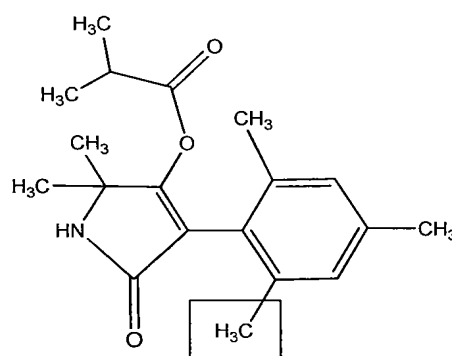
In sum, a *prima facie* case of obviousness has not been established because the '527 patent does not provide a reason to modify the compounds disclosed therein to arrive at the genus of the present invention, and impermissible hindsight was used to select compound A from over seven hundred compounds cited in the reference. Thus, claims 1-5 and 8 are patentable over the '527 patent, and it is respectfully requested that the rejection be withdrawn.

Even assuming *arguendo* that the Examiner had established a *prima facie* case of obviousness (which Applicants do not concede), the unexpected superiority of Applicants' invention over the compounds of the '527 patent is sufficient to rebut the *prima facie* case of obviousness based on the '527 patent. In support of this contention, Applicants submit herewith the Declaration of Dr. Isolde Haeuser-Hahn under 37 C.F.R. § 1.132 ("the Declaration"). The Declaration provides the results of comparison of the herbicidal pre-emergence and post-emergence activities between compound I-b-2, previously elected by Applicants as a single disclosed species (*See* Reply to Restriction and Election of Species Requirement dated December 15, 2008, page 1), and compound 329 of the '527 patent (designated in the Declaration as "Known from EP-456063"). The structures of both compounds are presented below.

Compound I-b-2



Compound 329



Applicants respectfully point the Examiner's attention to the fact that the only difference between these compounds is the ethyl versus methyl substitution at the phenyl ring of compound I-b-2 versus compound 329, respectively (as opposed to compound A selected by the Examiner as the closest prior art). However, as unambiguously

demonstrated by the Declaration, compound I-b-2 exhibits a clear superiority in both pre- and post-emergence activities over compound 329.

Table below summarizes the results of the tests presented in the Declaration:

Compound	Post-Emergence Test (% herbicidal efficacy)					Pre-Emergence Test (% herbicidal efficacy)				
	ALOMY	AVEFA	ECHCG	LOLMU	SETVI	ALOMY	AVEFA	ECHCG	LOLMU	SETVI
I-b-2	100	90	100	100	90	nr*	nr	100	100	70
329	10	0	60	70	80	nr	nr	20	100	0
Efficacy increase	90%	≥90%**	40%	30%	10%	nr	nr	80%	0%	≥70%**

*nr -not reported.

**Only a lower limit % efficacy increase can be calculated.

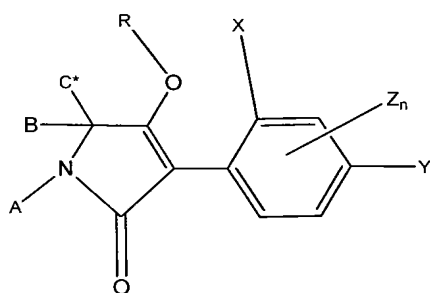
As evident from the table, compound I-b-2 exhibits moderate to marked (10% to ≥90%) increase in herbicidal efficacy compared to compound 329 in all but one test (*See* pre-emergence test, LOLMU). Furthermore, in the post-emergence test, compound I-b-2 is, on average, 96% effective against the tested weeds, compared to the 44% effectiveness of compound 329. Similarly, in the pre-emergence activity, compound I-b-2 exhibits 90% average effectiveness, compared to 40% average effectiveness of compound 329. Additionally, in some instances compound I-b-2 outperforms compound 329 by as much as 70-90% (See the Declaration, AVEFA in PO and SETVI in PE tests). Therefore, the Declaration clearly demonstrates that addition of a methyl group confers a significant and unexpected superiority to the compounds of the present invention over the '527

patent, which could not have been predicted merely on "the expectation that structurally similar compounds would possess similar properties and because its routine nature to perform such experimentation in the chemical arts," as alleged by the Office. (*See* Office Action, page 9).

Thus, in view of the nearly absolute herbicidal activity of compound I-b-2, the claimed compounds characterized by an ethyl versus methyl substitution of the phenyl ring would not have been predictable. As such, even if a *prima facie* case of obviousness were established, which it has not, Applicant respectfully contends that these unexpected results would be sufficient to overcome such a rejection.

The '560 patent

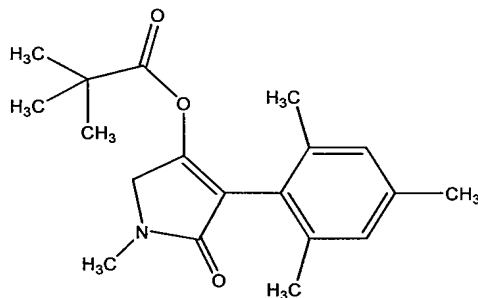
The '560 patent purportedly discloses insecticidal, acaricidal, herbicidal, and antimycotic compounds of the general formula:



(*See*, inter alia, Abstract of the '560 patent).

According to the Examiner, the species closest to the compounds of the present invention found in the '560 patent is illustrated in Example 2 of the '560 patent, and has the following formula B:

B.



(See col. 13, Example 2 of the '560 patent).

The Office notes that the only difference between the '560 patent and the present invention is the presence of methyl versus ethyl substituent on the phenyl ring, and states:

It would have been obvious to those skilled in the chemical arts at the time the claimed invention was made to make and use analogs of the compounds described in US 5,045,560 to produce the instant invention. Analogs differing only in the substitution of methyl with ethyl, are *prima facie* obvious, and require no secondary teaching.

(Office Action, page 7).

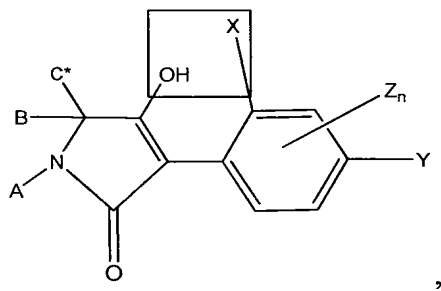
Furthermore, the Office asserts:

The instant claimed compounds would have been obvious, because one skilled in the art would have been motivated to prepare homologues of the compounds taught in the reference with the expectation of obtaining compounds which could be used in herbicidal and insecticidal compositions.

(Office Action, pages 7-8).

Applicants respectfully disagree that a *prima facie* case of obviousness has been established. As argued above, in order to establish *prima facie* obviousness of a new compound one must identify some reason that would lead a chemist to modify a known compound. *Takeda Chem. Indus., Ltd. v. Alphapharm Pty., Ltd.*, 492 F.3d 1350 (Fed. Cir. 2007). As it relates to the present invention, the Examiner fails to provide a reason why a chemist would modify the specified compounds of the '560 patent to arrive at the compound of the present invention.

Specifically, the '560 patent discloses examples of more than seven hundred compounds that are described to be suitable for use as insecticides, acaricides, herbicides, and antimycocides. (See Tables 1-3 of the '560 patent). Of these, six (6) compounds have been tested for their insecticidal activity (See Example A of the '560 patent, col. 93, ll. 9-31), and three (3) have been tested for their antimycotic *in-vitro* activity (See Example B of the '560 patent, col. 96, ll. 5-25). All of the tested compounds are of the general formula:



wherein X is Cl or CH₃.

Applicants respectfully point the Examiner's attention to the fact that all of the compounds tested in the '560 patent differ from the compounds of the present invention by at least *two* substituents: 1) a halogen or methyl versus ethyl on the aryl ring, and 2) hydroxy versus acetate on the pyrrolidine. With regards to the compound B taught in the Example 2 of the '560 patent, no tests for insecticidal, acaricidal, herbicidal, or antimycotic activity are described. The '560 patent does not teach or reasonably suggest, nor does it provide a motivation for, modifying compound B in the manner suggested by the Examiner. Therefore, the '560 patent does not provide a "reason that would have led a chemist to modify a known compound in a particular manner [necessary] to establish prima facie obviousness of a new claimed compound." *Takeda Chem. Indus., Ltd. v. Alphapharm Pty., Ltd.*, 492 F.3d 1350 (Fed. Cir. 2007).

Additionally, Applicants contend that the Office selected compound B for modification into the presently claimed compounds based on impermissible hindsight. As discussed above, out of over seven hundred compounds disclosed by the '560 patent, only nine were tested for their activity, none of which include compound B, and all of which differ from the compounds of the present invention by at least *two* substituents. The facts presented in the '560 patent would not have led one of ordinary skill in the art to modify compound B to arrive at the presently claimed compounds. Thus, Applicants contend that the Office merely selected compound B from the exceedingly broad disclosure of the '560 patent based on impermissible hindsight.

In sum, a *prima facie* case of obviousness has not been established because the '560 patent does not provide a reason to modify the compounds disclosed therein to

arrive at the genus of the present invention, and impermissible hindsight was used to select compound B from over seven hundred compounds cited in the reference. Thus, claims 1-5 and 8 are patentable over the '560 patent, and it is respectfully requested that the rejection be withdrawn.

Obviousness -Type Double Patenting

Claims 1-5 and 8 have been rejected on the grounds of non-statutory obviousness-type double patenting as allegedly being unpatentable over claims 1-3 of the '560 patent, and claims 1-5, 7, and 10 of the '527 patent. Applicants respectfully traverse this rejection. Applicants believe that, based on the arguments presented above, the compounds claimed in the '560 patent and the '527 patent neither anticipate nor render obvious the compounds claimed in the present invention. Applicants respectfully request that the Examiner reconsiders and withdraws the rejection.

Claims 1-5 and 8 have been provisionally rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 1-5 and 12 of co-pending Application No. 11/666,870. Applicants respectfully request that the non-statutory double patenting rejection be held in abeyance until allowable subject matter is identified.

Objection

Claims 1-5 and 8 have been objected to as containing non-elected subject matter. Applicants believe that amendments introduced herein render this objection moot. Reconsideration and withdrawal of this objection is respectfully requested.

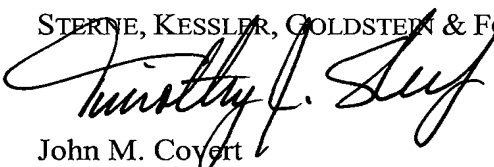
Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

 REG. No. 41,306
for John M. Covert
Attorney for Applicants
Registration No. 38,759

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1100 New York Avenue, N.W.
Washington, D.C. 20005-3934
(202) 371-2600

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